

NASA ADVISORY COUNCIL
National Aeronautics and Space Administration
Washington, DC 20546
Hon. Harrison H. Schmitt, Chairman

March 19, 2008

The Honorable Michael D. Griffin
Administrator
National Aeronautics and Space Administration
Washington, DC 20546

Dear Dr. Griffin:

Enclosed are the NASA Advisory Council recommendations and observations as agreed to in a public meeting on February 7, 2008 held at NASA Headquarters. The Council had a very productive two and half days of meetings which included briefings from the Honorable Shana Dale on the status of NASA's mission support offices, Mr. Tom Cremins on the International cooperation as it relates to the U.S. Space Exploration Policy, Ms. Cynthia Lodge on the FY2009 budget and from Ms. Jane Datta on the Shuttle to Constellation workforce mapping effort. The Council is very appreciative for all the hard work and hospitality from those involved at Headquarter in making this a successful quarterly meeting.

The Council is forwarding for your consideration one recommendation from the Science Committee and two observations which involve Aeronautics Funding and NASA's International Exploration Strategy. We are not expecting a formal response to these observations, but wished to merely emphasize our concerns in these areas. The Council will continue to monitor and consider future recommendations that may be of assistance to you in the subject areas of these observations.

Science Committee Recommendation

- 1) **Compare the cost drivers of Earth and Space Science Missions:** The costs of Earth Science missions appear systemically higher than Space Science missions for comparable class missions. A historical cost analysis should be conducted for Earth Science, Space Science and Planetary Science missions (1) to document the comparative costs and (2) to identify cost drivers and their sources in requirements, vendor and partner types, and ways of doing business.

Aeronautics Funding Observation

- 1) The National Aeronautics Research and Development (R&D) Policy and the follow-on Implementation Plan lay out the roles and responsibilities of participating federal agencies, including NASA, in a collaborative effort to advance U.S. technological leadership in aeronautics. In the Council's view, the NASA Aeronautics Program, while currently conducting high quality research, is not funded at a level sufficient to achieve the leadership objectives implicit in the National Aeronautics R&D Policy. In the Council's judgment, the NASA Aeronautics Program should be at least doubled over a five-year period in order to meet these objectives.

NASA's International Exploration Strategy Observation

- 2) Given the current international focus on lunar exploration, leading to an 'International Lunar Decade,' and given U.S. leadership in plans to return to the Moon with humans as part of the U.S. Space Exploration Policy, the Council recognizes and applauds NASA's efforts to engage the international community by means of the Global Exploration Strategy.

The Council urges NASA to continue to (1) carefully consider and coordinate plans with partner agencies to further develop the lunar exploration architecture, and (2) ensure coordination and standardization of key elements, such as orbital communication assets and data relays, the geodetic

coordinate control system, and geophysical network science. These actions are important during the precursor robotic phase as well as the outpost/human exploration phase. Leadership in these areas is needed to develop a robust and integrated robotic and human lunar exploration program in addition to maintaining U.S. leadership in space.

In addition to the above mentioned recommendation and observations, the Council also endorsed two important forward actions. The first was assigned to the Lunar Exploration Analysis Group (LEAG) to review further lunar exploration architecture concept developments and assess how well continued developments align with the recommendations of the Council from the 2007 Lunar Science Workshop. The second action was requested of the Aeronautics Research Mission Directorate (ARMD) to develop a short list of priority systems-level research projects with discrete start and end dates to be considered in addition to and as an augmentation of the existing funding effort. Both the LEAG and ARMD have already accepted these actions and are actively working them. The results from these forward actions will be reported back to the Council for further deliberations concerning these topics.

If there are any questions on the proceedings of our meeting, please contact me.

Best Regards,

A handwritten signature in black ink, appearing to read "Harrison H. Schmitt". The signature is fluid and cursive, with the first name "Harrison" being more prominent than the last name "Schmitt".

Harrison H. Schmitt
Chairman
Enclosures

NASA Advisory Council
Council Recommendation
[Tracking Number S-08-01](#)

Committee Name: Science Committee

Chair: Dr. Ed David

Date of Public Deliberation: February 7, 2008

Date of Transmission: March 19, 2008

Short title of the proposed Recommendation:

Compare the cost drivers of Earth and Space Science Missions

Short description of the proposed Recommendation:

The costs of Earth Science missions appear systemically higher than Space Science missions for comparable class missions. A cost analysis study should be conducted for Earth Science, Space Science and Planetary Science missions (1) to document the comparative costs and (2) to identify cost drivers and their sources in requirements, vendor and partner types, and ways of doing business.

Major reasons for proposing the Recommendation:

The National Research Council released its first decadal survey for Earth Science in January 2007. NASA, via its FY2009 budget request, is beginning implementation of the decadal survey. NASA has done a comparison of NRC's estimates of decadal survey mission costs with its own, and found that some are close and others are off by a factor of 2 or more. Further, some space science missions making analogous types of measurements are found to cost less, and it is important to learn if this is due to scientific and technical requirements such as accuracy, calibration, and simultaneity, or to acquisition approaches and sources. For example, in the space sciences instruments are often built by universities and involve student labor, whereas in Earth science most instruments are built by industrial contractors. Understanding the sources of differences in cost drivers is important to planning acquisition strategies for additional decadal survey missions.

Consequences of no action on the proposed Recommendation:

NASA will lack the data necessary to structure the most efficient architecture and acquisition approaches for new science missions.